



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

W-L Research, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE
Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EX-
CLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (PLANT VARIETY PROTECTION ACT, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

ALFALFA

'WL 316'



In Testimony Whereof, I have hereunto set
my hand and caused the seal of the Plant
Variety Protection Office to be affixed
at the City of Washington
this 27th day of May in
the year of our Lord one thousand nine
hundred and eighty-two.

Attest:

Kenneth H. Evers
Acting
Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

John R. Block
Secretary of Agriculture

INSTRUCTIONS

GENERAL: Send an original copy of the application and exhibits, at least 2,500 viable seeds, and \$500 fee (\$250 filing fee and \$250 examination fee) to U.S. Dept. of Agriculture, Agricultural Marketing Service, Livestock, Poultry, Grain and Seed Division, Plant Variety Protection Office, National Agricultural Library Building, Beltsville, Maryland 20705. (See section 180.175 of the Regulations and Rules of Practice.) Retain one copy for your files. All items on the face of the form are self-explanatory unless noted below.

ITEM

- 5 Give the date the applicant determined that he had a new variety based on (1) the definition in section 41(a) of the Act and (2) the date a decision was made to increase the seed.
- 13a Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method; (2) the details of subsequent stages of selection and multiplication; (3) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified and (4) evidence of uniformity and stability.
- 13b Give a summary statement of the variety's novelty. Clearly state how this novel variety may be distinguished from all other varieties in the same crop. If the new variety most closely resembles one or a group of related varieties: (1) identify these varieties and state all differences objectively; (2) attach statistical data for characters expressed numerically and demonstrate that these differences are significant; and (3) submit, if helpful, seed and plant specimens or photographs of seed and plant comparisons clearly indicating novelty.
- 13c Fill in the Exhibit C, Objective Description form, for all characteristics for which you have adequate data.
- 13d Describe any additional characteristics that are not described, or whose description cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the description of characteristics that are difficult to describe, such as, plant habit, plant color, disease resistance, etc.
- 14a If "YES" is specified (seed of this variety be sold by variety name only as a class of certified seed) the applicant may NOT reverse his affirmative decision after the variety has either been sold and so labeled, his decision published, or the certificate has been issued. However, if the applicant specified "NO," he may change his choice. (See section 180.16 of the Regulations and Rules of Practice.)
- 15a See section 42 of the Plant Variety Protection Act and section 180.7 of the Regulations and Rules of Practice.



8500031

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: See Reverse.

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

1a. TEMPORARY DESIGNATION OF VARIETY 78 T 4		1b. VARIETY NAME WL 316		FOR OFFICIAL USE ONLY PV NUMBER 8200031	
2. KIND NAME Alfalfa		3. GENUS AND SPECIES NAME Medicago Sativa L.		FILING DATE 11/23/81	TIME 11:00 A.M. P.M.
4. FAMILY NAME (BOTANICAL) Leguminosae		5. DATE OF DETERMINATION November 15, 1979		FEE RECEIVED \$ 500.00 \$ 250.00	DATE 11/23/81 2/25/82
6. NAME OF APPLICANT(S) W-L Research, Inc.		7. ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) 2000 Oak Street Bakersfield, CA 93301		8. TELEPHONE AREA CODE AND NUMBER (805) 327-4491	
9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: (Corporation, partnership, association, etc.) Corporation			10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION CA, Sept. 15, 1980 as amended		11. DATE OF INCORPORATION Jan 15, 1958
12. NAME AND MAILING ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS: A.A. Hanson, Director of Research, W-L Research, Inc. 7625 Brown Bridge Rd., Highland, MD 20777 (301) 286-2100					
13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:					
<input checked="" type="checkbox"/> 13A. Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.)					
<input checked="" type="checkbox"/> 13B. Exhibit B, Novelty Statement.					
<input checked="" type="checkbox"/> 13C. Exhibit C, Objective Description of the Variety (Request form from Plant Variety Protection Office.)					
<input checked="" type="checkbox"/> 13D. Exhibit D, Additional Description of the Variety.					
14a. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See Section 83(a). (If "Yes," answer 14B and 14C below.) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO					
14b. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			14c. IF "YES," TO 14B, HOW MANY GENERATIONS OF PRODUCTION BEYOND BREEDER SEED? <input checked="" type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input checked="" type="checkbox"/> CERTIFIED		
15a. DID THE APPLICANT(S) FILE FOR PROTECTION OF THIS VARIETY IN OTHER COUNTRIES? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO (If "Yes," give name of countries and dates.)					
15b. HAVE RIGHTS BEEN GRANTED THIS VARIETY IN OTHER COUNTRIES? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO (If "Yes," give name of countries and dates.)					

16. DOES THE APPLICANT(S) AGREE TO THE PUBLICATION OF HIS/HER (THEIR) NAME(S) AND ADDRESS IN THE OFFICIAL JOURNAL? ☒ YES ☐ NO

17. The applicant(s) declare(s) that a viable sample of basic seed of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

10/19/1981
(DATE)


(SIGNATURE OF APPLICANT)

(DATE)

(SIGNATURE OF APPLICANT)

Origin and Breeding History of WL 316

WL 316 is a synthetic variety consisting of 567 plants that were selected from seven experimental synthetics, following screening for either anthracnose or bacterial wilt. The seven experimental synthetics represented the end product of four cycles of field selection, recombination and evaluation in either yield tests or nurseries. In each cycle, plants were selected for resistance to foliar diseases and apparent freedom from one or more of the following: anthracnose, Fusarium wilt, bacterial wilt, Phytophthora root rot and spotted alfalfa aphid. The original source material traces predominantly to Vertus, with lesser contributions from Team and germplasm derived from Grimm (it is estimated that 79% of the germplasm in this variety is of Flemish origin).

The 567 selected plants were grown in an isolation cage at Bakersfield, CA, and seed harvested in 1978.

1800058



Exhibit A (Continued)

WL 316

Type and frequency of variants

No variants are recognized in WL 316 beyond the limits defined in Exhibit C.

Evidence of uniformity and stability

WL 316 is stable in all essential and distinguishing characteristics during normal seed production. WL 316 is as uniform as other alfalfa varieties presently accepted by state seed certifying programs.

AAH:jpj



EXHIBIT BNovelty Statement

A claim for the novelty of WL 316 is based on a comparison with the variety that is most similar, namely, Saranac AR.

Verticillium Wilt (See Objective Description, page 3 of 4)

WL 316	Resistant
Saranac AR	- Susceptible

Spotted Alfalfa Aphid (See Objective Description, page 4 of 4)

WL 316	- Resistant
Saranac AR	- Susceptible

1800031



Exhibit C (Continued)

WL 316

Winter hardiness

Average winter hardiness scores assigned in a replicated test at Rosemount, Minnesota, following the open winter of 1980-81 with no snow cover.

<u>Entry</u>	<u>Average Score</u> ^{/2}
WL 316	3.0
78 HB ^{/1}	3.0
Multileaf	5.5
Oneida	2.8
Gladiator	2.8
Perry	3.8
WL 220	3.8
555	6.5
Vernal	2.8

^{/1} Hardy, WL experimental

^{/2} Scores: 1=no injury, 3=only slight projected yield loss, 5=moderate injury -20% + stand loss and projected yield loss, 7=severe injury, 9=completely dead.

These data would indicate that WL 316 has a much higher level of winter hardiness than would be projected on the basis of fall dormancy rating.

AAH:jpj



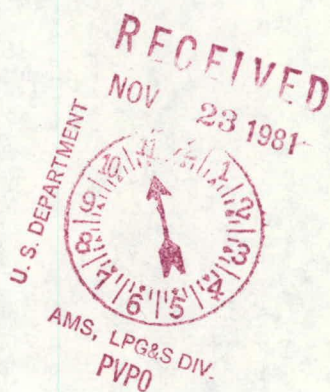
EXHIBIT DAdditional Information

Fall dormancy - Highland, Maryland

Date of last cutting: 9-21-81
Date of reading: 11-05-81

<u>Variety</u>	<u>Av. Height (inches)</u>	<u>100 spaced plants</u>
Vernal	2.5	
Saranac	3.5	
Lahontan	3.8	
Moapa 69	9.5	
WL 316	5.3	
MEAN	4.7	
LSD (.05)	1.0	
(.01)	1.5	
CV %	12.0	

8500031



RECORDATION FORM COVER SHEET
PVP CERTIFICATES ONLY

To the Acting Commissioner of the Plant Variety Protection Office. Please record the attached original documents or copy thereof.

1. Name of conveying party(ies):

W-L RESEARCH, INC.

- ☐ Individual(s) ☐ Association
☐ General Partnership ☐ Limited Partnership
☒ Corporation - State Nevada
☐ Other _____

Additional name(s) of conveying party(ies) attached? ☐ Yes ☒ No

3. Nature of conveyance:

- ☐ Assignment ☐ Merger
☒ Security Agreement ☐ Change of Name
☐ Other _____

Execution Date: June 23, 1998

2. Name and address of receiving party(ies):

Name: BANKAMERICA BUSINESS CREDIT, INC.

Street Address: 55 South Lake Avenue, Suite 900

City: Pasadena State: California

ZIP: 91101

- ☐ Individual(s) citizenship _____
☐ Association _____
☐ General Partnership _____
☐ Limited Partnership _____
☒ Corporation-State Delaware
☐ Other _____

If assignee is not domiciled in the United States, a domestic representative designation is attached: ☐ Yes ☐ No
(Designation must be a separate document from Assignment)
Additional name(s) & address(es) attached? ☐ Yes ☒ No

4. PVP certificate identifying information:

A. PVP No.:

8200031

B. Date certificate issued or application filed:

05/27/82

C. Variety:

"WL 316" alfalfa

Additional numbers attached? ☐ Yes ☒ No

5. Name and address of party to whom correspondence concerning document should be mailed:

Name: Tamsen Valoir
Jenkins & Gilchrist

Internal Address: _____

Street Address: 1445 Ross Avenue,
Suite 3200

City: Dallas State: Texas Zip: 75202-2799

6. Total number of PVP applications or certificates involved: 1

7. Total fee (37 CFR 3.41): \$ 25.00

- ☒ Enclosed
☐ Authorized to be charged to deposit account.

8. Deposit Account number: _____

(Attach duplicate copy of this page if paying by deposit account)

DO NOT USE THIS SPACE

9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

Tamsen Valoir

Name of Person Signing

Tamsen Valoir
Signature

June 30, 1998

Date

Total number of pages comprising cover sheet:

1

98 JUL -2 P2:05

RECEIVED
USDA-AMS-PVPO

PVP CERTIFICATE SECURITY AGREEMENT

WHEREAS, W-L RESEARCH, INC., a Nevada corporation ("Assignor"), having a business address of 8701 W. US Highway 14, Evansville, WI 53536, is the owner of the pending issued Plant Protection Act (PVP) certificate(s) listed below; and

WHEREAS, BankAmerica Business Credit, Inc., a Delaware corporation, having an office at 55 South Lake Avenue, Suite 900, Pasadena, California 91101 as "Agent" for the "Lenders" as defined and described in the Loan and Security Agreement dated as of June 23, 1998 ("Assignee"), is desirous of acquiring a SECURITY INTEREST in such PVP certificate(s);

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, said Assignor does hereby sell, assign, transfer and set over unto the said Assignee a SECURITY INTEREST in, to, and under the PVP certificate(s):

No. 8200030 Issued
No. 8200031 Issued
No. 8500032 Issued
No. 8600041 Issued
No. 8600042 Issued
No. 8700060 Issued
No. 8700074 Issued
No. 8700171 Issued
No. 8800172 Issued
No. 8900266 Issued
No. 9100147 Issued
No. 9100205 Issued
No. 9500010 Issued
No. 9500026 Issued
No. 9600215 Pending

W-L RESEARCH, INC.

By: 

Printed Name: Henry A. Ingalls

Title: Vice President

98 JUL -2 P2:05

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USDA-AMS-PVPO

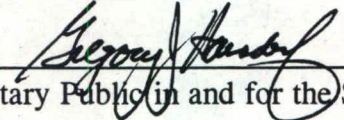
STATE OF TEXAS

§
§
§

COUNTY OF DALLAS

Henry A. Ingalls, Vice President, of W-L RESEARCH, INC., personally appeared before me, and being first duly sworn declared that he signed the security agreement in the capacity designated, and further states that he has read the above security agreement, and the statements therein contained are true.

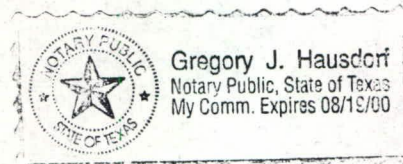
SUBSCRIBED AND SWORN TO before me this 23 day of June, 1998.



Notary Public in and for the State of Texas

My Commission Expires:

Printed Name



20 11 -5 65 02

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UNITED STATES DEPARTMENT OF AGRICULTURE
PLANT VARIETY PROTECTION OFFICE

CERTIFICATE OF MAILING

BOX ASSIGNMENT

Acting Commissioner of the Plant Variety Protection Office
Plant Variety Protection Office
10301 Baltimore Blvd.
Beltsville, MD 20705-2351.

Dear Sir:

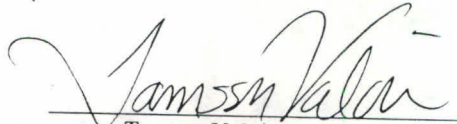
I hereby certify that this correspondence,

74 Cover sheets
74 Assignments
Check in the amount of \$1,850.00 (74 x \$25.00)
74 Return postcards

for the attached (in Exhibit A) PVP certificate numbers are being deposited with the
United States Postal Service as Express Mail, mailing label number EE507465254US, postage
prepaid, in an envelope addressed to:

BOX ASSIGNMENT

Acting Commissioner of the Plant Variety Protection Office
Plant Variety Protection Office
10301 Baltimore Blvd.
Beltsville, MD 20705-2351.


Tamsen Valoir

Date: July 1, 1998

IPHOU:15412.1 20992-00039

Jenkins & Gilchrist

A PROFESSIONAL CORPORATION
1100 LOUISIANA STREET, SUITE 1800
HOUSTON, TEXAS 77002

TEXAS COMMERCE BANK, N.A.
301 W. BEAUREGARD
SAN ANGELO, TEXAS 76903

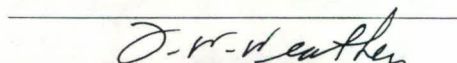
903870

DATE	AMOUNT
July 1, 1998	*\$1,850.00*

AY *One Thousand Fifty Dollars and 00 Cents*

TO THE
ORDER
OF

U. S. Department Of Agriculture
Plant Variety Protection Office



TWO SIGNATURES REQUIRED OVER \$2500
VOID AFTER 180 DAYS
NOT VALID FOR OVER \$5000

⑈0903870⑈ ⑆111300880⑆ ⑈06300009654⑈

10. GIVE ITEM LENGTH FREQUENCY DISTRIBUTION FOR SUBMITTED AND 1 TO 5 STANDARD VARIETIES 1/

VARIETY NAME	STEM LENGTH FREQUENCY DISTRIBUTION 2/											AVERAGE STEM LENGTH
	0 - 5 mm. %	6 - 10 mm. %	11 - 15 mm. %	16 - 20 mm. %	21 - 30 mm. %	31 - 40 mm. %	41 - 50 mm. %	51 - 60 mm. %	61 - 70 mm. %	71 - 80 mm. %	81 + mm. %	
WL 316	0	3	9	20	48	14	6	0	0	0	0	25.0 mm
Vernal	2	6	16	29	43	4	0	0	0	0	0	20.1
Lahontan	1	2	5	32	52	7	1	0	0	0	0	21.9
Saranac	0	1	15	28	46	10	0	0	0	0	0	22.5
Moapa 69	0	0	6	9	48	25	10	2	0	0	0	29.0

11. FLOWER COLOR 3/ (DETERMINE COLOR ON FRESHLY OPENED FLOWERS)

% PURPLE
 % VARIEGATED
 % YELLOW
 % CREAM
 % WHITE

12. DISEASE, INSECT, AND NEMATODE RESISTANCE: (Enter resistance of submitted and check cultivars. Circle check cultivars used.)

DISEASE	CULTIVAR	% RESISTANT PLANTS	AVG. SEVERITY INDEX (ASI)	ASI LSD .05	TEST, YEAR & LOCATION 4/
BACTERIAL WILT	(SUBMITTED)	19.7	21		1) Univ. of Minn.
	(RES. CK.) VERNAL	39.2	42		2) 1979
	(SUS. CK.) NARRAGANSETT	0.0	00		3) Rosemount, Minn.
ANTHRACNOSE	(SUBMITTED)	61			1) W-L Research, Inc.
	Saranac AR (RES. CK.) AR	63			2) 1979
	(SUS. CK.) SARANAC	8	← too high		3) Highland, MD
COMMON LEAF SPOT	(SUBMITTED)				
	(RES. CK.) RAMSEY				
	(SUS. CK.) RANGER				
DOWNY MILDEW	(SUBMITTED)				
	(RES. CK.) SARANAC				
	(SUS. CK.) KANZA				
PHYTOPHTHORA ROOT ROT	(SUBMITTED)	14.4	14		1) Univ. of Minn.
	(RES. CK.) AGATE	43.7	43		2) 1979
	(SUS. CK.) SARANAC	2.1	02		3) St. Paul, Minn
Fusarium Wilt	(SUBMITTED)	48.8			1) Univ. of Minn.
OTHER	(RES. CK.) Agate	49.8			2) 1979
	Narragansett (SUS. CK.)	17.0	17		3) Rosemount, Minn.

1/ Preferred standards: Saranac, Vernal, Norseman, Lahontan, Mesa of incandescent filament light and twelve hours darkness at 5° C.

2/ From cotyledonary node to tip of stem 20 days after planting.

3/ For further clarification consult USDA Agricultural Handbook No.

4/ Give: The institution in charge of test, (2) year, and (3) location. Use test procedure if it differs from procedure suggested in ARS-NC-19, September 1974.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782OBJECTIVE DESCRIPTION OF VARIETY
Alfalfa (*Medicago sativa* L. complex)

NAME OF APPLICANT(S) W-L Research, Inc.	VARIETY NAME OR TEMPORARY DESIGNATION WL 316
ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code) 2000 Oak Street Bakersfield, CA 93301	FOR OFFICIAL USE ONLY PVPO NUMBER 8200031

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. or) when number is either 99 or less or 9 or less.

NOTE: For single plant data a minimum of 100 plants is suggested

1. PRIMARY AREA OF ADAPTATION		INDICATE AREA WHERE TEST WAS CONDUCTED. FURTHER EXPLANATION CAN GO IN COMMENTS AT THE END OF THE FORM.
<input type="text" value="2"/> 1 = NORTHWEST 4 = SOUTHEAST 7 = INTERMOUNTAIN	2 = NORTHCENTRAL 5 = SOUTHWEST	3 = NORTHEAST 6 = SOUTHERN PLAINS
		<input type="text" value="2"/> AREA TESTED
2. WINTER HARDINESS		
<input type="text" value="5"/> 1 = NON-HARDY (Mesa Sirsa) 5 = MODERATELY HARDY (Saranac) 9 = EXTREMELY HARDY (Norseman)	3 = INTERMEDIATE NON-HARDY 7 = HARDY (Vernal)	<input type="text" value="2"/> AREA TESTED
<input type="text" value="2"/> SOURCE OF INFORMATION: 1 = ANTICIPATED 2 = MEASURED		
3. FALL GROWTH HABIT		
<input type="text" value="3"/> 1 = ERECT (Mesa Sirsa) 5 = INTERMEDIATE (Saranac) 9 = DECUMBENT (Norsement)	3 = SEMIERECT (DuPuits) 7 = SEMIDECUMENT (Vernal)	<input type="text" value="2"/> AREA TESTED
4. RECOVERY AFTER FIRST SPRING CUTTING		
<input type="text" value="3"/> 1 = VERY FAST (Mesa Sirsa) 7 = SLOW (Vernal)	3 = FAST (Saranac) 9 = VERY SLOW (Norseman)	5 = INTERMEDIATE
		<input type="text" value="2"/> AREA TESTED
5. FLOWERING DATE (FIRST SPRING GROWTH)		
<input type="text" value="0"/> <input type="text" value="3"/> DAYS EARLIER THAN	<input type="text" value="4"/> 1 = MESA SIRSA 3 = SARANAC 5 = NORSEMAN	2 = LAHONTAN 4 = VERNAL
<input type="text" value="0"/> <input type="text" value="2"/> DAYS LATER THAN	<input type="text" value="3"/>	<input type="text" value="1"/> AREA TESTED
6. CROWN TYPE		
<input type="text" value="7"/> 1 = SPREADING ROOTS 5 = BROAD (Vernal) 9 = NARROW (Mesa Sirsa)	3 = SPREADING RHIZOMES (Teton) 7 = INTERMEDIATE (Saranac)	<input type="text" value="2"/> AREA TESTED
7. PLANT COLOR		
<input type="text" value="2"/> 3 = DARK GREEN (Weevichuk) 7 = LIGHT GREEN (Ranger)	5 = GREEN (Vernal)	<input type="text" value="2"/> AREA TESTED
8. HAIRINESS		
Light-Sparse Pubescence (Only)		(Same as stems)
<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> % PLANTS WITH PUBESCENT STEMS	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> % PLANTS WITH PUBESCENT PODS	
9. POD SHAPE		
<input type="text" value="0"/> <input type="text" value="8"/> <input type="text" value="0"/> % PLANTS WITH TIGHT COILS	<input type="text" value="0"/> <input type="text" value="1"/> <input type="text" value="9"/> % PLANTS WITH LOOSE COILS	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="1"/> % PLANTS WITH SICKLE PODS (Less than 1 coil)

8500031

12. DISEASE, INSECT, AND NEMATODE RESISTANCE: (Enter resistance of submitted and check cultivars. Circle check cultivars used.)

DISEASE	CULTIVAR	% RESISTANT PLANTS	AVG. SEVERITY INDEX (ASI)	ASI LSD .05	TEST, YEAR & LOCATION 4/
Verticillium Wilt OTHER	(SUBMITTED)	50.0			1) W-L Research, Inc.
	(RES. CK.) Vertus	40.9			2) 1980
	(SUS. CK.) Washoe	10.0			3) Wapato, WA
Verticillium Wilt OTHER	(SUBMITTED)	50.0			1) W-L Research, Inc.
	Maris Kabul (RES. CK.)	28.5			2) 1980
	Saranac AR (SUS. CK.)	13.2			3) Wapato, WA
INSECT	CULTIVAR	% SEEDLING SURVIVAL			TEST, YEAR & LOCATION 4/
PEA APHID	(SUBMITTED)				1) W-L Research, Inc.
	Dawson (RES. CK.)				2) 1979
	Vernal (SUS. CK.)				3) Highland, MD
SPOTTED ALFALFA APHID	(SUBMITTED)	22.5			1) W-L Research, Inc.
	(RES. CK.) KANZA	29.5			2) 1981
	Caliverde (SUS. CK.)	0.0			3) Bakersfield, CA
INSECT	CULTIVAR	% DEFOLIATION			TEST, YEAR & LOCATION 4/
ALFALFA WEEVIL	(SUBMITTED)				
	(RES. CK.) ARK				
	(SUS. CK.) VERNAL				
INSECT	CULTIVAR	% RESISTANT PLANTS	EMERGED ADULTS PER PLANT	EMERGED LSD .05	TEST, YEAR & LOCATION 4/
ALFALFA SEED CHALCID	(SUBMITTED)				
	(RES. CK.) LAHONTAN				
	(SUS. CK.) SONORA				
INSECT	CULTIVAR	% RESISTANT PLANTS	AVG. SEVERITY INDEX (ASI)	ASI LSD .05	TEST, YEAR & LOCATION 4/
POTATO LEAF-HOPPER	(SUBMITTED)				
	(RES. CK.)				
	(SUS. CK.)				
Blue Alfalfa Aphid OTHER	(SUBMITTED)				1) W-L Research, Inc.
	(RES. CK.) CUF 101				2) 1978
	Mesa Sirsa (SUS. CK.)				3) Bakersfield, CA

4/ Give: The institution in charge of test, (2) year, and (3) location.
ARC-NC-19, September 1974.

differs from procedure suggested in

12. DISEASE, INSECT, AND NEMATODE RESISTANCE: (Enter resistance of submitted and check cultivars. Circle check cultivars used.)

INSECT	CULTIVAR	% RESISTANT PLANTS	AVG. SEVERITY INDEX (ASI)	ASI LSD .05	TEST, YEAR & LOCATION ^{4/}
OTHER Spotted Alfalfa Aphid	(SUBMITTED) WL 311		1.50	0.65	1) W-L Research, Inc.
	(RES. CK.) Kanza		2.17		2) 1974
	Saranac AR (SUS. CK.)		4.50		3) Bakersfield, CA
NEMATODE	CULTIVAR	% RESISTANT PLANTS	INDEX (ASI)	ASI LSD .05	TEST, YEAR & LOCATION ^{4/}
STEM NEMATODE	(SUBMITTED)	22	[REDACTED]		1) W-L Research, Inc.
	(RES. CK.) LAHONTAN	28			2) 1981
	(SUS. CK.) RANGER	12			3) Warden, WA
NORTHERN ROOT KNOT NEMATODE	(SUBMITTED)				
	(RES. CK.) NEV. SYN. XX				
	(SUS. CK.) LAHONTAN				
SOUTHERN ROOT KNOT NEMATODE	(SUBMITTED)				
	(RES. CK.) MOAPA 69				
	(SUS. CK.) LAHONTAN				
OTHER	(SUBMITTED)				
	(RES. CK.)				
	(SUS. CK.)				

13. INDICATE A VARIETY THAT MOST CLOSELY RESEMBLES THE VARIETY SUBMITTED FOR THE FOLLOWING CHARACTERS:

CHARACTER	VARIETY	CHARACTER	VARIETY
AREA OF ADAPTATION	Saranac AR	PLANT HEIGHT	DuPuits
RECOVERY AFTER CUTTING	DuPuits	WINTER HARDINESS	Oneida

REFERENCES

Barnes, D.K., and C.H. Hanson, An Illustrated Summary of Genetic Traits in Tetraploid and Diploid Alfalfa, ARS Technical Bul. 1370.
 Barnes, D.K., et al, Standard Tests to Characterize Pest Resistance in Alfalfa Varieties. ARS-NC-19, September 1974.
 Nittler, L.W., G.W. McKee, and J.L. Newcomer, Principles and Methods of Testing Alfalfa Seed for Varietal Purity. New York Agricultural Experiment Station Bul. 807.
 USDA Agricultural Handbook No. 424.

COMMENTS